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A comparative analysis of user engagement and algorithmic performance: Facebook vs Instagram

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Abstract
In this article, we compare in detail the algorithmic performance and user engagement of the two most popular social networking sites, Facebook and Instagram, both owned by Meta Platforms, Inc. Although the platforms share ownership, their algorithms and content architectures result in distinct user experiences, and the study aims to explore how differences in algorithmic mechanisms and user engagement patterns impact user interaction and pleasure. 7 But its algorithm has come under fire for spreading false information and fostering echo chambers. Instagram's algorithm, on the other hand, uses user data—likes, comments, and viewing history—to provide a highly customized and eye-catching feed, encouraging regular and consistent interaction. We also discuss the implications for policymakers, content creators, and marketers, providing guidance on how businesses can enhance user engagement by optimizing their presence across several media. The findings indicate that Instagram promotes more frequent and instantaneous user interactions, whereas Facebook provides a platform for more in-depth, socially-oriented involvement, albeit with the challenge of managing content quality and user trust. The result of the investigation highlights the need for more research into how algorithmic changes and evolving user behaviors may impact engagement on both platforms in the future.

Keywords: Facebook, analysis, ramification, platform, algorithm, and demographic

Introduction
Social media platforms significantly influence how people connect, exchange information, and engage with content in today's digital world. Owned by Meta Platforms, Inc., Facebook and Instagram are two of the most important social media platforms globally. Even though they share ownership, they offer distinct user experiences and cater to different groups. Facebook, which started in 2004, is renowned for its diverse range of content, including text postings, videos, and group interactions, whereas Instagram, which debuted in 2010, is more focused on visually-driven content, such as photographs, videos, and stories.

At the heart of both networks are algorithms that determine what content users see. These algorithms seek to maximize user engagement by offering material that is customized according to user preferences and actions. On Facebook and Instagram, however, the algorithms and the kind of connection they promote are entirely different. These differences are important for academics, marketers, and content producers to understand in order to improve user engagement and maximize content strategy.

This study examines algorithmic performance and user engagement on Facebook and Instagram to gain a better understanding of how each platform promotes interaction as well as the unique benefits and drawbacks of its algorithms. These criteria can help us better understand how social media platforms impact user behavior and content consumption.

Problem Statement
Social media platforms are becoming more and more important for communication and information consumption, which begs the question of how various algorithms impact user engagement. Because Facebook and Instagram are both owned by Meta Platforms, Inc., users can enjoy distinct experiences due to their different structures and algorithms. This research tackles the challenge of comprehending how algorithmic differences between Facebook and Instagram affect user pleasure, content interaction, and engagement. Analyzing these platforms' by analyzing algorithmic performance and interaction patterns, the study seeks to educate stakeholders on how to best engage targeted audiences.

Objectives

With a focus on how Facebook and Instagram, both owned by Meta Platforms, Inc., influence user experiences, the main goal of this research study is to provide a thorough comparative examination of user engagement and algorithmic performance on these two platforms. The study's specific objectives are to:

1. **Examine User Engagement Patterns:** Examine user interaction with Facebook and Instagram material, comparing metrics like likes, comments, shares, and average time spent on each site.
2. **Analyse the Role of Algorithms:** Consider how platform algorithms affect user interaction and pleasure, especially the way that engagement is fueled by recommendations for tailored content.

Scope of The Study

The algorithmic performance and user engagement of Facebook and Instagram are the main subjects of this study. It looks at how users interact with content, how well computers personalize it, and how audience engagement is affected by different kinds of content (such as pictures, videos, and narratives). The study examines engagement measures including time spent on each site, likes, comments, and shares. An online survey that involves active users from a variety of demographics is used to gather data on behavior and preferences. The results of the study provide valuable information for platform developers, marketers, and content producers that want to increase engagement and optimize social media tactics.

Literature Review

- **Cotter (2019) [15]:** Explored the Instagram algorithm, namely its capacity to analyze user activity and customize the user experience. Instagram's Explore page, powered by machine learning algorithms, aims to boost users' time on the app by providing Due to continuous content reinforcement and tailored material depending on user interactions, the platform becomes addictive.
- **Enberg (2020) [16]:** Found that by encouraging regular consumption of short-form content, Instagram's introduction of features like Stories and Reels significantly raised user engagement. Instagram's short-form features, according to the study, result in quick, habitual interactions that increase users' frequency of use, whereas Facebook's feed-based style encourages lengthier, more in-depth involvement.
- **Cheng *et al.* (2021) [17]:** Compared the algorithmic transparency of Facebook and Instagram, indicating that the latter's opaquer algorithm offers more individualized content but less control over the user. In contrast, Facebook's slow transition to transparency, which includes
- content filters like the "Why am I seeing this post?" feature, aims to maximize engagement while addressing user concerns.
- **Phua *et al.* (2022) [18]:** Discovered that although Facebook has incorporated comparable short-form content formats, these features have not been as successful on the network, most likely as a result of Facebook's user base being older and more diverse. This shows that although short-form material works well for engagement, it might work better on platforms like Instagram, which draw in younger users and emphasize visual interaction.
- **Cotter (2022) [19]:** Examines Instagram's more ambiguous algorithm, which grants individuals little control over the appearance of their work but is good at matching content to user interests. Despite Instagram's continued success in increasing engagement through visually rich content, questions have been raised over algorithmic fairness due to its opaque recommendation system.
- **Kumar and Jha (2023) [20]:** With its focus on aesthetics and short-form content, Instagram's algorithm presents a number of options for marketers aiming to reach younger consumers, particularly through influencer marketing and eye-catching advertising. Instagram's visually appealing features, such Stories and Reels, are recommended for marketers to use in order to encourage rapid, recurring engagements.

Methodology

Research Design: Using a mixed-method approach, this study focuses on gathering quantitative primary data. An online survey that was given to active users of Facebook and Instagram was used to collect primary data in order to analyze algorithmic performance and user engagement on these platforms. The purpose of the poll was to record user behavior, engagement trends, and opinions regarding platform algorithms.

Survey Instrument: Responses were gathered via the online survey in the following categories:

- **Demographics:** Age, gender, occupation, and how often they use Facebook and Instagram were all disclosed by the participants. Using this data, people were categorized according to pertinent attributes.
- **User Engagement:** The survey looked at the average amount of time spent on each platform, the number of likes, comments, and shares per post, and the material kinds that users liked (text, photographs, videos, stories, etc.). The objective was to find patterns and measure engagement activities on both platforms.
- **User Perception of Algorithms:** Participants were questioned about how well they understood Facebook and Instagram algorithms. This part assessed users' opinions about the relevance of the content, their level of happiness with the content the algorithms provided, and how well each platform's algorithm matched their tastes.
- **Algorithmic Influence on Engagement:** How frequently consumers interact with algorithmically suggested content, like Facebook's Suggested Posts or Instagram's Explore tab, was another question the survey looked at. It evaluated how user behavior was impacted by algorithms, such as the propensity to interact with recommended content or follow new accounts.
- **Sampling:** The study used a random sample technique to guarantee that participant demographics, such as age, gender, and occupation, were diverse. Email invitations and social media ads were used to acquire 300 active users between the ages of 18 and 45. A broad cross-section of users interacting with both platforms was represented in this sample. A two-week timeframe was used to gather responses, guaranteeing a sufficient window for a variety of user feedback.

Data Analysis and Interpretation

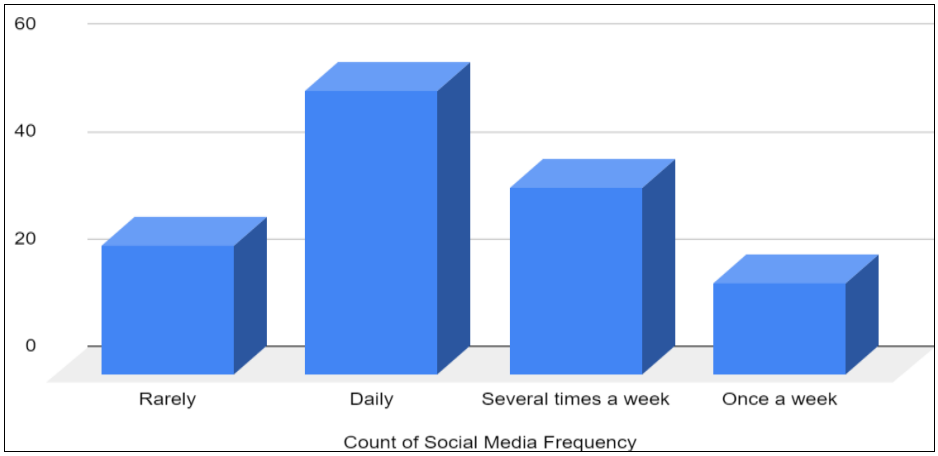

Fig 1: Count of social media frequency

Data Interpretation

The frequency of social media use by users is seen in the graph. Daily users are the largest category, with roughly 50 members, indicating high levels of involvement. This is followed by about 35 people using social media many times a week. While around 25 users connect with social media seldom, only 15 people check it once a week. Everyday engagement is a noteworthy trend, as the majority of users use social media often or daily, according to this research.

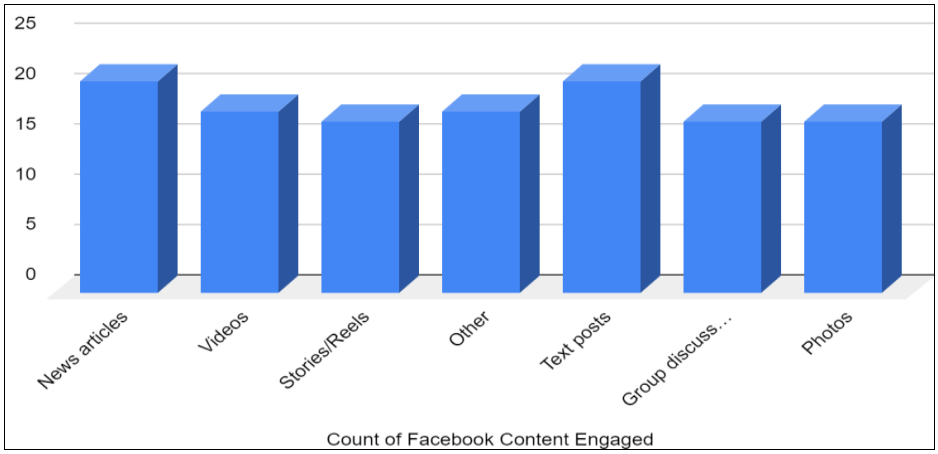

Fig 2: Count of Facebook content engaged

Data Interpretation

The graph displays the interactions between Facebook users and different types of material. The most engaging material is news articles and text posts, which each attract roughly 20 users, indicating that individuals prefer readable and instructive content. The next most popular content are photos, videos, and stories/reels, which all attract roughly 15 users and show a penchant for visual content. Approximately 15 individuals each take part in "Other" content types and group conversations. Despite the fact that news and text postings continue to be the most popular, the research shows that Facebook users are still driven to visual and interactive content.

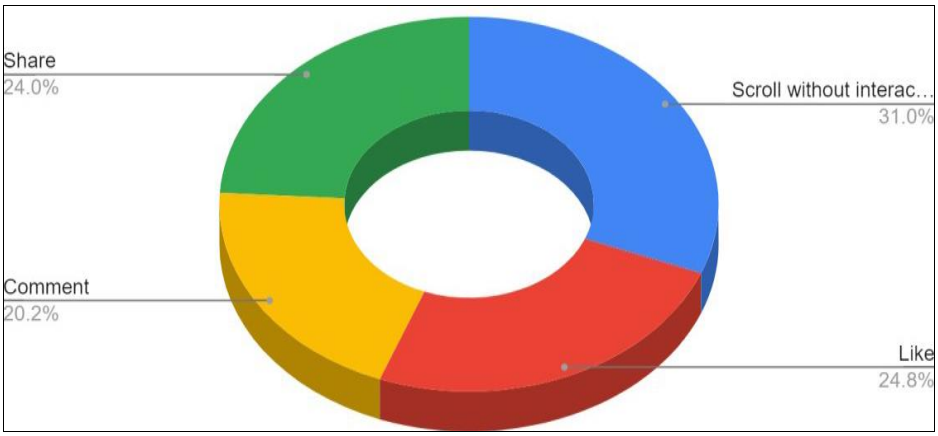

Fig 3: Count of Instagram engagement type

Data Interpretation

Numerous Instagram user engagement formats are shown in the graph. The majority of users (31%) scroll without engaging, demonstrating passive involvement. "Like" is the second most popular action, at 24.8%, suggesting that a significant portion of people like content to express interest. Second place goes to "Share" with 24%, suggesting that users exchange content with others on a regular basis. Finally, "Comment" has the lowest rates of engagement (20.2%), indicating that fewer users are actively participating in discussions. The primary interactive interactions are likes and shares, whereas passive scrolling is the most popular activity in general.

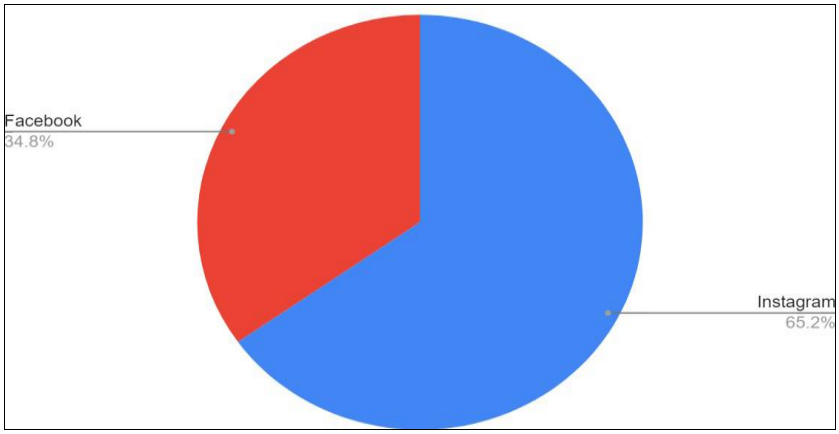

Fig 4: Count of platform with better engagement

Data Interpretation

The pie chart shows the levels of engagement on Facebook and Instagram. Instagram has a greater engagement rate than Facebook, at 65.2%, while Facebook's is lower at 34.8%. With over two-thirds of all activity, this indicates that Instagram is much more effective than Facebook at drawing users. These figures suggest that Instagram-focused strategies may yield higher engagement levels.

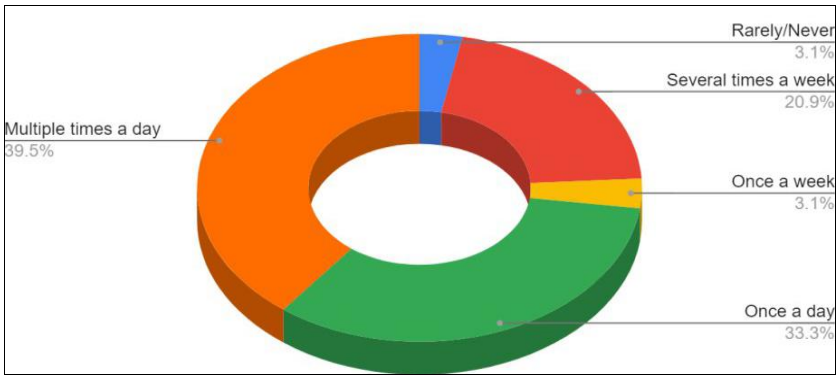

Fig 5: Count of Instagram usage frequency

Data Interpretation

The donut graphic illustrates the frequency of Instagram usage. The largest group (39.5%) uses Instagram frequently, while 33.3% of users use it once a day. In comparison, 3.1% of individuals use Instagram once a week, 3.1% use it occasionally or never, and 20.9% of people use it frequently. The majority of Instagram users are highly active, which points to a significant trend of daily engagement.

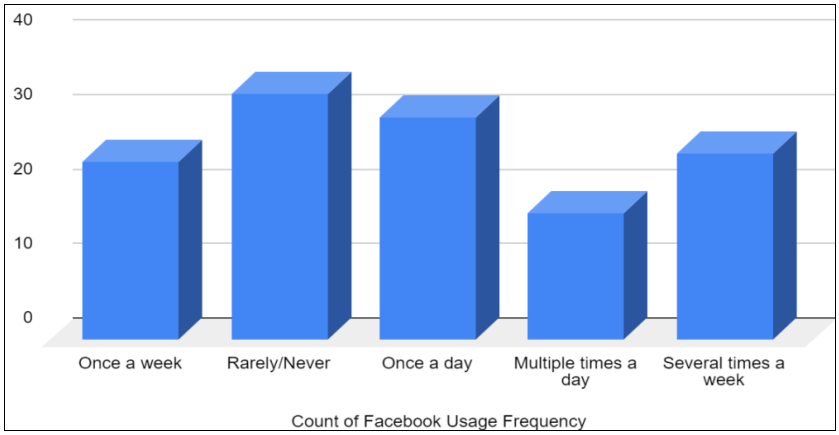

Fig 6: Count of Facebook usage frequency

Data Interpretation

Facebook usage frequency is shown in the bar chart. The largest group of Facebook users (more than 30) reported using the platform "rarely/never," indicating low engagement. A similar percentage use it "once a day," but "several times a week" and "once a week" show moderate usage and engagement. The frequency "multiple times a day" is the least popular with fewer than 15 respondents. Overall, the research suggests that Facebook has lower daily involvement than highly used websites like Instagram.

Results

In 2023, Facebook had more over 2.9 billion monthly active users, maintaining a higher overall user base (Meta Platforms, Inc., 2023). Instagram is thought to have more than 1 billion monthly active users; however, it doesn't always reveal precise numbers (Pew Research Center, 2021). Instagram shows greater engagement rates, with users more regularly engaging with material through likes, comments, and shares, while having a smaller user population (Social Media Today, 2022).

Posts from friends and family are given preference over public content by Facebook's algorithm, which has changed to emphasize content that encourages meaningful connections (Mosseri, 2018) [3]. Instagram uses a machine learning algorithm to curate the feed, delivering personalized material based on user interests and past interactions (Instagram, 2023).

Findings

1. **User Engagement:** When it comes to visual interactions like likes, shares, and comments, Instagram performs better than Facebook. Instagram increases engagement frequency, particularly among younger groups, by emphasizing visually appealing, short-form content like Stories and Reels.
2. **Algorithmic Influence:** Instagram's tailored feed successfully keeps users happy by providing extremely relevant information that is based on previous interactions. Despite encouraging more intimate social connections, Facebook's algorithm suffers from problems with false information, which undermines user pleasure and confidence.
3. **Content Type Preferences:** Instagram users are more interested in visually appealing content, which increases interaction. Text-based content, like news stories and personal messages, receives more engagement on Facebook, but visually interactive components, like videos and photographs, also draw a lot of user attention.
4. **Behavioral Patterns:** According to the report, Facebook exhibits more active group discussions and in-depth content engagements, whereas Instagram favors passive scrolling more often, with likes and shares serving as the main mode of engagement.

Observation

1. Because Instagram places a lot of emphasis on user timeliness and relevancy, its algorithm encourages regular platform involvement, which fosters user connection and a strong sense of community.
2. Despite its difficulties with content control, which undermines user trust, Facebook's algorithm encourages deep participation through social connections.
3. According to the study, Facebook's wider reach caters to users looking for a wider range of information and more meaningful social relationships, while Instagram's mobile-friendly, aesthetically pleasing interface is more effective at drawing frequent, brief interactions.

Discussion

Due to its emphasis on visual content and features that encourage engaging user experiences, Instagram enjoys greater engagement rates. Through user-friendly interfaces and innovative features, the platform's design promotes user engagement with information (Thompson, 2020). Because of the vast diversity of ages among Facebook's user base, different user behaviors may result in lower overall engagement metrics.

Algorithmic variations have a big effect on user involvement. Because Instagram's tailored feed shows material based on user preferences, it improves user satisfaction (Instagram, 2023). According to Perez (2020) [5], Facebook's algorithm has encountered difficulties with content moderation and the spread of false information, despite its goal of encouraging meaningful connections. These issues could have an impact on user engagement and trust.

Conclusion

Both Instagram and Facebook provide distinctive user engagement platforms that are fueled by different algorithmic techniques. Instagram's increased engagement rates indicate that its visually-driven, tailored strategy successfully encourages user involvement. Facebook's wide audience not only offers scale benefits but also emphasizes the necessity of ongoing algorithmic improvement to improve user engagement and handle content moderation issues. A number of findings that demonstrate the various tactics each platform uses to optimize user experience and conclusions have been reached by contrasting the algorithmic performance and user engagement of Facebook with Instagram. Due to differences in platform architecture, audience demographics, and content formats, user involvement and engagement levels differ even if both platforms utilize sophisticated algorithms to deliver personalized content. Particularly among younger users, Instagram's higher engagement rates can be attributed to its visually appealing, mobile-friendly interface and emphasis on shorter-form content, such as Stories and Reels. Naturally, this design promotes regular encounters and a stronger sense of community. Because Instagram's feed and Stories prioritize recentness and relevancy in its algorithm, users should expect a more dynamic and instantaneous experience. The AI-powered features on Instagram further boost interaction by precisely anticipating user preferences, fostering a feeling of community and encouraging regular platform usage. As a result of the different preferences of their separate user populations, both platforms ultimately show strengths in algorithmic design and interaction. With short-form, interactive material, Instagram's model has demonstrated remarkable effectiveness in promoting interaction among a younger audience, whereas Facebook's approach provides depth and fulfills a wider range of social, educational, and entertainment objectives. According to the findings, while algorithmic performance is important, the structure and content formats tailored to each platform's target demographic have a major influence on user

engagement levels. Companies and marketers who want to make the most of their tactics in these ecosystems need to understand these features as both platforms keep developing.

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